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PATENT APPLICATION

ATTORNEY DOCKET NO. __200302277-1__

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Michael Burrows	**Confirmation No.:**
Application No.: 10/042,028	**Examiner:** Channavajjala, S.
Filing Date: 01/07/2002	**Group Art Unit:** 2177

Title: SYSTEM AND METHOD FOR INDEXING AND QUERYING STRUCTURED TEXT

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on __03/31/2005__ .

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) $500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

( ) (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d) for the total number of months checked below:

        ( ) one month $120.00
        ( ) two months $450.00
        ( ) three months $1020.00
        ( ) four months $1590.00

    ( ) The extension fee has already been filled in this application.

(X) (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **08-2025** the sum of ___$500.00___. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

Michael Burrows

By _____

Barry D. Blount

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Reg. No. **35,069**

Date: **May 25, 2005**

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Rev 12/04 (Aplbrief)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§	
Michael Burrows	§	Group Art Unit: 2164
	§	
Serial No.: 10/042,028	§	
	§	Examiner: Channavajjala, Srirama T.
Filed: January 7, 2002	§	
	§	
For: SYSTEM AND METHOD FOR	§	Atty. Docket: 200302277-1
INDEXING AND QUERYING	§	NUHP:0285/BLT/POW
STRUCTURED TEXT	§	
	§	
	§	

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Alexandria, VA 22313-1450

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal mailed on

March 28, 2005, and received by the Patent Office on March 31, 2005.

The Commissioner is authorized to charge the requisite fee of $500.00, and any

additional fees which may be necessary to advance prosecution of the present application, to

Account No. 08-2025, Order No. 200302277-1/BLT/POW (NUHP:0285).

1.   **REAL PARTY IN INTEREST**

The real party in interest is Compaq Information Technologies Group, L.P. (CITG), a

Texas Limited Partnership having its principal place of business in Houston, Texas and the

Assignee of the above-referenced application. The Assignee of the above-referenced

application will be directly affected by the Board's decision in the pending appeal.

2.   **RELATED APPEALS AND INTERFERENCES**

The Appellants are unaware of any other appeals or interferences related to this

Appeal. The undersigned is the Appellants' legal representative in this Appeal.

3.   **STATUS OF CLAIMS**

Claims 1-65 are currently pending. Further, claims 1-65 are currently under final

rejection and are thus the subject of this appeal.

4.   **STATUS OF AMENDMENTS**

The instant claims have not been amended subsequent to the final rejection.

Accordingly, there are no outstanding amendments to be considered by the Board.

5.   **SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention generally relates to a computer-implemented method for

indexing a database of documents, and a computer-implemented method for searching the

database of documents. Application, page 4, lines 3-4. One embodiment of the present

invention uses nesting level information stored in index entries to identify and match

together, start and end meta words comprising fields at assorted nesting levels within a

document. Application, page 4, lines 5-7. Further, based on a query specifying words to be

found within fields, spatial criteria are applied to the identified meta words to determine if the specified words are found within the specified fields. Application, page 4, lines 7-9. It should be noted that, in accordance with embodiments of the present invention, to generate a meta word entry (e.g., 308), an indexer stores an indexable meta word in the object identifier (e.g., 204) at a specific nesting level, and appends the nesting level for that meta word to the meta word itself. *See* Application, page 12, lines 8-12. Having nesting level information associated with the meta words facilitates quick and effective searching of fields nested within fields. *See* Application, page 3, lines 18-20.

With regard to aspects of the invention set forth in independent claim 1, discussions relating to the recited features of claim 1 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to a computer-implemented method of indexing a database of documents, a subset of the documents containing nested fields, each nested field having an associated start meta word (e.g., ParBegin, ListBegin) and end meta word (e.g., ParEnd, ListEnd), each meta word having an associated nesting level. *See e.g.,* Application, page 14, lines 13-17; *see also* Fig. 4A-D; *see also* page 11, lines 11-24. The method comprises indexing each document containing nested fields by parsing the document to determine locations within the document of words and meta words in the document and to determine the nesting level associated with each meta word. *See, e.g.,* page 10, line 18-page 14, line 17. The method also comprises generating an index (e.g., 304). The index includes word entries (e.g., 212, 306), each word entry identifying locations within the document of an identified word. *See, e.g.,* page 8, line 24-page 10, line 14; *see also* page 12, line 1-page 14, line 17. The index includes meta word entries (e.g., 214, 308), each meta word entry identifying locations within the document of an identified meta word and indicating the determined

nesting level associated with the meta word. *See, e.g.,* page 9, line 13-page 10, line 14; *see also* page 12, line 1-page 14, line 17. The index includes generic meta word entries (e.g., 216, 310), each generic meta word entry identifying locations within the document of a class of meta words, including meta words at all nesting levels of the meta words found in the document, the generic meta word entry including, for each identified location within the generic meta word entry, information identifying the nesting level associated with the meta word at the identified location. *See, e.g.,* page 8, line 24-page 10, line 14; *see also* page 12, line 15-page 14, line 17.

With regard to aspects of the invention set forth in independent claim 7, discussions relating to the recited features of claim 7 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to a computer-implemented method of searching a database of documents, a subset of the documents containing nested fields, each nested field having an associated start meta word and end meta word, each meta word having an associated nesting level. *See e.g.,* Application, page 14, lines 13-17; *see also* Fig. 4A-D; *see also* page 11, lines 11-24; *see also* page 12, lines 8-12. The method comprises receiving a query that specifies one or more words to be found within a specified field within a document. *See, e.g.,* Application, page 14, line 25-page 15, line 2; *see also* Fig. 4A, block 402. The method also comprises determining a start meta word and end meta word associated with the specified field. *See, e.g.,* Application, page 14, line 28-page 15, line 2; *see also* Fig. 4A, block 404. The method also comprises searching an index to identify locations of the specified words and locations of a class of meta words that includes at least one of the start meta word and end meta word associated with the specified field. *See, e.g.,* page 15, line 4-page 16, line 20; *see also* Fig. 4A, block 408. The method also comprises applying first spatial criteria to the

identified locations of the class of meta words with respect to the identified locations of the specified words to select a meta word from the class of meta words. *See, e.g.,* Application, page 17, lines 4-28; *see also* Fig. 4A, block 416. The method also comprises determining the nesting level of the selected meta word. *See, e.g.,* Application, page 17, line 30-page 18, line 8; *see also* Fig. 4B, block 420. The method also comprises identifying a complementary meta word corresponding to the selected meta word. *See, e.g.,* Application, page 18, lines 10-21; *see also* Fig. 4B, block 422. The method also comprises searching the index to determine a location for the identified complementary meta word. *See, e.g.,* Application, page 18, line 23-page 19, line 2; *see also* Fig. 4B, block 424. The method also comprises applying second spatial criteria to the identified locations of the specified words and to the determined location for the identified complementary meta word to generate a result that indicates whether the specified words are found within a first field associated with the selected meta word and the identified complementary meta word. *See, e.g.,* Application, page 19, line 24-page 20, line 6; *see also* Fig. 4B, block 426.

With regard to aspects of the invention set forth in independent claim 16, discussions relating to the recited features of claim 16 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to a computer-implemented method of searching a database of documents, a subset of the documents containing nested fields, each nested field having an associated start meta word and end meta word, each meta word having an associated nesting level. *See e.g.,* Application, page 14, lines 13-17; *see also* Fig. 4A-D; *see also* page 11, lines 11-24; *see also* page 12, lines 8-12. The method comprises receiving a query that specifies one or more words to be found within a first specified field that is found within a second specified field within a document. *See, e.g.,* Application, page 14, line 25-page 15, line 2; *see*

also Fig. 4A, block 402. The method also comprises determining a first start meta word and first end meta word associated with the first specified field, and a second start meta word and second end meta word associated with the second specified field. *See, e.g.,* Application, page 14, line 28-page 15, line 2; *see also* Fig. 4A, block 404. The method also comprises searching an index to identify: locations of the specified words (e.g., block 410), locations of a first class of meta words that includes at least one of the first start meta word and first end meta word associated with the first specified field (e.g., block 412), and locations of a second class of meta words that includes at least one of the second start meta word and second end meta word associated with the second specified field (e.g., block 414). *See, e.g.,* page 15, line 4-page 16, line 20; *see also* Fig. 4A, block 408.

The method also comprises applying first spatial criteria, determined at least in part from the received query, to the identified locations of the first and second classes of meta words and the identified locations of the specified words to select a first meta word from the first class of meta words, and a second meta word from the second class of meta words. *See, e.g.,* Application, page 17, lines 4-28; *see also* Fig. 4A, block 416; *see also* Fig. 4B, block 418. The method also comprises determining the nesting levels of the first and second selected meta words. *See, e.g.,* Application, page 17, line 30-page 18, line 8; *see also* Fig. 4B, block 420; *see also* page 20, lines 24-32; *see also* Fig. 4C, block 434. The method also comprises identifying a first and second complementary meta words, corresponding to the first and second selected meta words. *See, e.g.,* Application, page 18, lines 10-21; *see also* Fig. 4B, block 422; *see also* page 21, lines 1-12; *see also* Fig. 4C, block 436. The method also comprises searching the index to determine a location for the first identified complementary meta word and a location for the second identified complementary meta

word. *See, e.g.,* Application, page 18, line 23-page 19, line 2; *see also* Fig. 4B, block 424; *see also* Fig. 4C, block 438.

The method also comprises applying second spatial criteria, determined from the received query, to the identified locations of the specified words and to the determined locations for the first and second identified complementary meta words to generate a result that indicates whether the specified words are found within a first field, associated with the first selected meta word and the first identified complementary meta word, that is found within a second field, associated with the second selected meta word and the second identified complementary meta word. *See, e.g.,* Application page 21, line 14-page 22, line 20.

With regard to aspects of the invention set forth in independent claim 29, discussions relating to the recited features of claim 29 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to a computer-implemented method for searching an index of a database of documents, the index having entries, each entry including an object identifier and a location list, each object identifier including at least one of a word and a meta word, each location list including one or more locations of the at least one of a word and a meta word of each corresponding object identifier, each entry associated with a meta word also including nesting level information for the meta word. *See e.g.,* Application, page 14, lines 13-17; *see also* Fig. 4A-D; *see also* page 11, lines 11-24; *see also* page 12, lines 8-12. The method comprises receiving a query that specifies one or more words to be found within a specified field within a document. *See, e.g.,* Application, page 14, line 25-page 15, line 2; *see also* Fig. 4A, block 402. The method also comprises determining a start meta word and end

meta word associated with the specified field. *See, e.g.,* Application, page 14, line 28-page 15, line 2; *see also* Fig. 4A, block 404. The method also comprises identifying a bounding meta word by selecting one of the start meta word and end meta word. *See, e.g.,* Application, page 17, lines 4-19. The method also comprises searching the index to identify a first entry that has an object identifier (e.g., 204) associated with the specified words. *See, e.g.,* Application, page 9, lines 12-29. The method also comprises searching the index to identify a second entry that has an object identifier (e.g. 204) associated with the bounding meta word. *See, e.g.,* Application, page 9, lines 12-29.

The method also comprises determining a bounding location from a closest occurrence of the bounding meta word with respect to the specified words, by comparing the location list of the second entry and the location list of the first entry. *See, e.g.,* Application, page 17, lines 4-28. The method also comprises identifying nesting level information for the bounding meta word at the bounding location. *See, e.g.,* Application, page 17, line 30-page 18, line 21; *see also* page 7, lines 5-15; *see also* page 10, line 29-page 11, line 9. The method also comprises identifying a complementary meta word to the bounding meta word having corresponding nesting level information as the identified nesting level information for the bounding meta word. *See, e.g.,* Application, page 7, lines 5-15; *see also* page 11, lines 10-24; *see also* page 16, lines 22-23. The method also comprises searching the index to locate a third entry that has an object identifier associated with the complementary meta word and determining a complementary location from the location list of the third entry. *See, e.g.,* Application, page 14-page 29, line 10.

The method also includes generating a result that indicates whether the specified words are within a first field, associated with the bounding meta word and the

complementary meta word, by determining whether a location in the location list of the first entry falls between the bounding location and the complementary location. *See, e.g.,* Application, page 29, line 12-page 30, line 13; *see also* page 25, line 14-page 26, line 3.

With regard to aspects of the invention set forth in independent claim 34, discussions relating to the recited features of claim 34 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to a computer program product for use in conjunction with a computer system, the computer system for indexing a database of documents, a subset of the documents containing nested fields, each nested field having as associated start meta word and end meta word, each meta word having an associated nesting level, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein. *See e.g.,* Application, page 14, lines 13-17; *see also* Fig. 4A-D; *see also* page 11, lines 11-24; *see also* page 12, lines 8-12; *see also* page 24, lines 5-39. The mechanism comprises an indexer for indexing each document containing nested fields by configuring the computer to: parse the document to determine locations within the document of words and meta words in the document, and to determine the nesting level associated with each meta word and generate an index. *See, e.g.,* page 10, line 18-page 14, line 17. The index includes word entries (e.g., 212, 306), each word entry identifying locations within the document of an identified word; *See, e.g.,* page 8, line 24-page 10, line 14; *see also* page 12, line 1-page 14, line 17.

The index also includes meta word entries (e.g., 214, 308), each meta word entry identifying locations within the document of an identified meta word and indicating the determined nesting level associated with the meta word. *See, e.g.,* page 9, line 13-page 10,

line 14; *see also* page 12, line 1-page 14, line 17. The index also includes generic meta (e.g., 216, 310) word entries, each generic meta word entry identifying locations within the document of a class of meta words, including meta words at all nesting levels of the meta words found in the document, the generic meta word entry including, for each identified location within the generic meta word entry, information identifying the nesting level associated with the meta word at the identified location. *See, e.g.,* page 8, line 24-page 10, line 14; *see also* page 12, line 15-page 14, line 17.

With regard to aspects of the invention set forth in independent claim 39, discussions relating to the recited features of claim 39 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to a computer program product for use in conjunction with a computer system, the computer system for searching a database of documents, a subset of the documents containing nested fields, each nested field having an associated start meta word and end meta word, each meta word having an associated nesting level, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein. *See e.g.,* Application, page 14, lines 13-17; *see also* Fig. 4A-D; *see also* page 11, lines 11-24; *see also* page 12, lines 8-12. The computer program comprises instructions for receiving a query that specifies one or more words to be found within a specified field within a document. *See, e.g.,* Application, page 14, line 25-page 15, line 2; *see also* Fig. 4A, block 402.

The computer program also comprises instructions for determining a start meta word and end meta word associated with the specified field. *See, e.g.,* Application, page 14, line 28-page 15, line 2; *see also* Fig. 4A, block 404. The computer program also comprises

instructions for searching an index to identify locations of the specified words and locations

of a class of meta words that includes at least one of the start meta word and end meta word

associated with the specified field. *See, e.g.,* page 15, line 4-page 16, line 20; *see also* Fig.

4A, block 408. The computer program also comprises instructions for applying first spatial

criteria to the identified locations of the class of meta words with respect to the identified

locations of the specified words to select a meta word from the class of meta words. *See,*

e.g., Application, page 17, lines 4-28; *see also* Fig. 4A, block 416. The computer program

also comprises, instructions for determining the nesting level of the selected meta word. *See,*

e.g., Application, page 17, line 30-page 18, line 8; *see also* Fig. 4B, block 420. The computer

program also comprises instructions for identifying a complementary meta word

corresponding to the selected meta word. *See, e.g.,* Application, page 18, lines 10-21; *see*

also Fig. 4B, block 422.

The computer program also comprises instructions for searching the index to

determine a location for the identified complementary meta word; and *See, e.g.,* Application,

page 18, line 23-page 19, line 2; *see also* Fig. 4B, block 424. The computer program also

comprises instructions for applying second spatial criteria to the identified locations of the

specified words and to the determined location for the identified complementary meta word

to generate a result that indicates whether the specified words are found within a first field

associated with the selected meta word and the identified complementary meta word. *See,*

e.g., Application, page 19, line 24-page 20, line 6; *see also* Fig. 4B, block 426.

With regard to aspects of the invention set forth in independent claim 48, discussions

relating to the recited features of claim 48 can be found at least in the locations in the

specification and drawings cited below. By way of example, an embodiment in accordance

with the present invention relates to a computer program product for use in conjunction with a computer system, the computer system for searching a database of documents, a subset of the documents containing nested fields, each nested field having an associated start meta word and end meta word, each meta word having an associated nesting level, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein. *See, e.g.,* Application, page 18, line 23-page 19, line 2; *see also* Fig. 4B, block 424; *see also* Fig. 4C, block 438. The computer program comprises instructions for receiving a query that specifies one or more words to be found within a first specified field that is found within a second specified field within a document. *See, e.g.,* Application, page 18, lines 10-21; *see also* Fig. 4B, block 422; *see also* page 21, lines 1-12; *see also* Fig. 4C, block 436.

The computer program also comprises instructions for determining a first start meta word and first end meta word associated with the first specified field, and a second start meta word and second end meta word associated with the second specified field. *See, e.g.,* Application, page 17, line 30-page 18, line 8; *see also* Fig. 4B, block 420; *see also* page 20, lines 24-32; *see also* Fig. 4C, block 434. The computer program also comprises instructions for searching an index to identify: locations of the specified words, locations of a first class of meta words that includes at least one of the first start meta word and first end meta word associated with the first specified field, and locations of a second class of meta words that includes at least one of the second start meta word and second end meta word associated with the second specified field. *See, e.g.,* Application, page 17, lines 4-28; *see also* Fig. 4A, block 416; *see also* Fig. 4B, block 418.

The computer program also comprises instructions for applying first spatial criteria, determined at least in part from the received query, to the identified locations of the first and second classes of meta words and the identified locations of the specified words to select a first meta word from the first class of meta words, a second meta word from the second class of meta words. *See, e.g.,* page 15, line 4-page 16, line 20; *see also* Fig. 4A, block 408. The computer program also comprises instructions for determining the nesting levels of the first and second selected meta words. *See, e.g.,* Application, page 14, line 28-page 15, line 2; *see also* Fig. 4A, block 404. The computer program also comprises instructions for identifying a first and second complementary meta words, corresponding to the first and second selected meta words, and searching the index to determine a location for the first identified complementary meta word and a location for the second identified complementary meta word. *See, e.g.,* Application, page 14, line 25-page 15, line 2; *see also* Fig. 4A, block 402; *see also* page 14, lines 13-17; *see also* Fig. 4B-D; *see also* page 11, lines 11-24; *see also* page 12, lines 8-12.

The computer program also comprises instructions for applying second spatial criteria, determined from the received query, to the identified locations of the specified words and to the determined locations for the first and second identified complementary meta words to generate a result that indicates whether the specified words are found within a first field, associated with the first selected meta word and the first identified complementary meta word, that is found within a second field, associated with the second selected meta word and the second identified complementary meta word. *See, e.g.,* Application page 21, line 14-page 22, line 20.

With regard to aspects of the invention set forth in independent claim 61, discussions

relating to the recited features of claim 61 can be found at least in the locations in the

specification and drawings cited below. By way of example, an embodiment in accordance

with the present invention relates to a computer program product for use in conjunction with

a computer system, the computer system for searching an index of a database of documents,

the index having entries, each entry including an object identifier and a location list, each

object identifier including at least one of a word and a meta word, each location list including

one or more locations of the at least one of a word and a meta word of each corresponding

object identifier, each entry associated with a meta word also including nesting level

information for the meta word, the computer program product comprising a computer

readable storage medium and a computer program mechanism embedded therein. *See e.g.*,

Application, page 14, lines 13-17; *see also* Fig. 4A-D; *see also* page 11, lines 11-24; *see also*

page 12, lines 8-12.

The computer program comprises instructions for receiving a query that specifies one

or more words to be found within a specified field within a document. *See, e.g.*, Application,

page 14, line 25-page 15, line 2; *see also* Fig. 4A, block 402. The computer program also

comprises instructions for determining a start meta word and end meta word associated with

the specified field. *See, e.g.*, Application, page 14, line 28-page 15, line 2; *see also* Fig. 4A,

block 404. The computer program also comprises instructions for identifying a bounding

meta word by selecting one of the start meta word and end meta word. *See, e.g.*, Application,

page 17, lines 4-19. The computer program also comprises instructions for searching the

index to identify a first entry that has an object identifier associated with the specified words.

See, e.g., Application, page 9, lines 12-29. The computer program also comprises

instructions for searching the index to identify a second entry that has an object identifier

associated with the bounding meta word. *See, e.g.,* Application, page 9, lines 12-29. The computer program also comprises instructions for determining a bounding location from a closest occurrence of the bounding meta word with respect to the specified words, by comparing the location list of the second entry and the location list of the first entry. *See, e.g.,* Application, page 17, lines 4-28.

The computer program also comprises instructions for identifying nesting level information for the bounding meta word at the bounding location. *See, e.g.,* Application, page 17, line 30-page 18, line 21; *see also* page 7, lines 5-15; *see also* page 10, line 29-page 11, line 9. The computer program also comprises instructions for identifying a complementary meta word to the bounding meta word having corresponding nesting level information as the identified nesting level information for the bounding meta word. *See, e.g.,* Application, page 7, lines 5-15; *see also* page 11, lines 10-24; *see also* page 16, lines 22-23. The computer program also comprises instructions for searching the index to locate a third entry that has an object identifier associated with the complementary meta word and instructions for determining a complementary location from the location list of the third entry. *See, e.g.,* Application, page 14-page 29, line 10. The computer program also comprises instructions for generating a result that indicates whether the specified words are within a first field, associated with the bounding meta word and the complementary meta word, by determining whether a location in the location list of the first entry falls between the bounding location and the complementary location. *See, e.g.,* Application, page 29, line 12-page 30, line 13; *see also* page 25, line 14-page 26, line 3.

6. **GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

First Ground of Rejection for Review on Appeal:

The Appellants respectfully urge the Board to review and reverse the Examiner's first

ground of rejection in which the Examiner rejected claims 1-6 and 34-38 under 35 U.S.C. §

102(e) as being anticipated by Judd et al. (U.S. Patent No. 6,360,215), which is hereinafter

referred to as "the Judd reference."

Second Ground of Rejection for Review on Appeal:

The Appellants respectfully urge the Board to review and reverse the Examiner's

second ground of rejection in which the Examiner rejected claims 7-33 and 39-65 under 35

U.S.C. § 103(a) as being unpatentable over the Judd reference in view of Frank et al. (U.S.

Pub. No. 2002/0078035), which is hereinafter referred to as "the Frank reference."

7. **ARGUMENT**

As discussed in detail below, the Examiner has improperly rejected the pending

claims. Further, the Examiner has misapplied long-standing and binding legal precedents and

principles in rejecting the claims under Sections 102 and 103. Accordingly, the Appellants

respectfully request full and favorable consideration by the Board, as the Appellants believe

that claims 1-38 are currently in condition for allowance.

A. **Ground of Rejection No. 1:**

The Examiner rejected claims 1-6 and 34-38 under 35 U.S.C. § 102(e) as being

anticipated by the Judd reference. The Appellants respectfully traverse this rejection as set

forth in detail below.

i.   Judicial precedent has clearly established a legal standard for a prima facie anticipation rejection.

Anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985). Thus, for a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Moreover, the prior art reference also must show the *identical* invention "*in as complete detail as contained in the ... claim*" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). Accordingly, the Appellants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter.

ii.   The Examiner's rejection is improper because the rejection fails to establish a prima facie case of anticipation.

The Judd reference cannot anticipate the present claims because Judd does not disclose each and every element of the claims. For example, independent claim 1 of the present application recites, "parsing the document to determine ... meta words ... and to determine the *nesting level* associated with each meta word ... indicating the determined *nesting level* ... and ... identifying the *nesting level* associated with the meta word at the identified location." Independent claim 34 recites, "configuring the computer to: parse the document to determine ... meta words ... and to determine the *nesting level* associated with each meta word ... indicating the determined *nesting level* ... and identifying the *nesting level* associated with the meta word at the identified location."

The Judd reference does not disclose meta words having associated nesting levels as

defined by the present application. Furthermore, Judd certainly does not disclose

determining, indicating, and identifying such nesting levels. The Judd reference merely

discloses tag words that are associated with documents, where a tag word is "any character

string that is to be associated with a document for search purposes." Judd, col. 9, lines 1-2.

While tag words may comprise "meta-information," Judd does not disclose nesting

levels associated with meta words as presently recited. *See* Judd, col. 9, lines 1-14.

In the Final Office Action, while the Examiner relies on the Abstract of the Judd

reference to teach "each meta word having an associated nesting level," the Applicant asserts

that it does not actually teach these elements. *See* Final Office Action, page 3. The entire

Abstract from Judd relied on in support of the rejection with respect to these elements is set

forth below:

> A method and apparatus are provided for retrieving
> documents from a collection of documents based on
> information other than the contents of a desired
> document. The collection of documents, which may
> be a hypertext system or documents available via
> the World Wide Web, is indexed. In one
> embodiment, an indexing process of a search engine
> receives one or more specifications that identify
> documents, or document locations, and non-content
> information such as a tag word or code word. The
> indexing process searches the index to identify all
> documents in the index that match one or more of
> the specifications. If a match is found, the tag word
> is added to the index, and information about the
> matching document is stored in the index in
> association with the tag word. A search query is
> submitted to the search engine. The search query is
> automatically modified to add a reference to the tag
> word, such as a query term that will exclude any
> index entry for a document associated with the tag
> word. The search is executed against the index, and
> a set of search results is generated. Accordingly, the
> search results automatically exclude all documents

associated with the tag word. These techniques may
be used, for example, to implement a Web search
service that produces more accurate search results
or that prevents certain documents, such as
pornographic materials, from appearing in search
results.

Judd et al., Abstract.

Additionally, in the Response to Arguments section of the Final Office Action, the Examiner

cites elements 138-138c and the text at column 9, lines 1-11 and 40-45 of the Judd reference

as support for alleged disclosure of "each meta word having an associated nesting level." *See*

Final Office Action, page 18. The text cited by the Examiner is reproduced below:

> A tag word is any character string that is to
> be associated with a document for search purposes.
> Often, the tag words are dedicated code words, or
> words that are not normally found in a document or
> dictionary, although this characteristic is not
> required. Examples of tag words include
> "n2h2/black" and "n2h2/white," as shown by tag
> words 138a, 138c of Fig. 3. Other tag words may be
> properties or meta information such as the title of a
> document, abstract, or others, as described further
> below. For example, a tag word may be
> "ADVERTISEMENT" to indicate that its
> associated Web page(s) contain advertising. A tag
> word may be "VERIFIED" to indicate that its
> associated Web page(s) contain factual information
> that has been verified by some independent third
> party.
> ...
> The Process retrieves the next location
> identifier or URL in the table of location identifiers
> of index 16, as shown by block 204. The loop
> formed by block 204 and block 208 represents a
> sequential retrieval of the location identifier or URL
> of each document that is indexed in the index 16.

Judd et al., col. 9, lines 1-14 and 40-45.

As is clear from the passages relied on by the Examiner, the teachings of the Judd

reference have nothing to do with meta data having associated nesting levels, as described in

the present application. Indeed, the Appellants respectfully assert that the Examiner has

clearly misinterpreted "nesting levels." This misinterpretation is evidenced by the

Examiner's statement set forth below:

> As best understood by the examiner, BOOLEAN operator allows you to search for specific record[s] containing two or more search terms or tag word[s] for example as detailed in col 12, line 1-6, col 15, line 61-67, further *nesting allows users to perform multiple tasks, many search engines support the use of parentheses to nest various terms or keywords or phases or meta word[s]*. Additionally, this can be achieved for example Boolean connector as detailed in col 15, line 64-65, further it is noted that typical search engine does multi-level searches, first casting a wide net, then narrowing by searching within that set result [see col 1, 61-4].
>
> Final Office Action, page 18, (emphasis added).

The Appellants assert that the Judd reference merely discloses retrieving documents

from a collection comprising indexing documents using a tag word and modifying a search

query to reference the tag word. *See* Judd, Abstract. Contrary to the assertion in the Office

Action, there is no teaching or suggestion in the Judd reference of meta data having

associated nesting levels.

For at least the reasons set forth above, the Appellants respectfully submit that

independent claims 1 and 34 and the respective dependent claims are not anticipated by the

Nomura reference. Accordingly, the Appellants request that the Board overturn the rejection

based on the Nomura reference and allow claims 1-6 and 34-38.

B.   **Ground of Rejection No. 2:**

The Examiner rejected claims 7-33 and 39-65 under 35 U.S.C. § 103(a) as being

unpatentable over the Judd reference in view of the Frank reference. The Appellants

respectfully traverse this rejection as set forth in detail below.

i.   **Judicial precedent has clearly established a legal standard for a prima facie obviousness rejection.**

The burden of establishing a *prima facie* case of obviousness falls on the Examiner.

Ex parte Wolters and Kuypers, 214 U.S.P.Q. 735 (Bd. Pat. App. & Inter. 1979). Obviousness

cannot be established by combining the teachings of the prior art to produce the claimed

invention absent some teaching or suggestion supporting the combination. *ACS Hospital*

Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir.

1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that

the combination includes all of the claimed elements, but also a convincing line of reason as

to why one of ordinary skill in the art would have found the claimed invention to have been

obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (Bd.

Pat. App. & Inter. 1985). When prior art references require a selected combination to render

obvious a subsequent invention, there must be some reason for the combination other than the

hindsight gained from the invention itself, i.e., something in the prior art as a whole must

suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc.*

v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

ii.   **The Examiner's rejection under 35 U.S.C. § 103 is improper because it fails to establish a prima facie case of obviousness.**

The Judd reference cannot anticipate the present claims because Judd does not

disclose each and every element of the claims. For example, independent claims 7 and 39 of

the present application recite, "determining the nesting level of the selected meta word." Independent claims 16 and 48 recite, "determining the nesting levels of the first and second meta words." Independent claims 29 and 61 recite, "identifying nesting level information for the bounding meta word at the bounding location."

As discussed above, the Examiner rejected claims 7-33 and 39-65 under 35 U.S.C. § 103(a) as being unpatentable over the Judd reference in view of the Frank reference. Specifically, the Examiner relied on the Judd reference for its alleged teaching of nesting levels as recited in independent claims 7, 16, 29, 39, 48 and 61. However, as discussed regarding the rejection under 35 U.S.C. § 102, the Judd reference is deficient because it does not disclose nesting levels, as claimed in the present application. Further, the Frank reference does not remedy the deficiencies of the Judd reference.
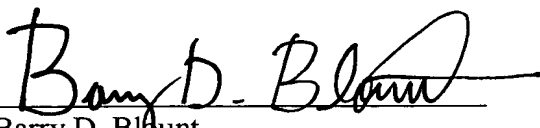
In light of the forgoing remarks, Appellants respectfully request that the Board withdraw the obviousness rejection in relation to claims 7-33 and 39-65. Additionally, Appellants respectfully request that the Board direct the Examiner to allow the instant claims.

Conclusion

The Appellants respectfully submit that all pending claims are in condition for

allowance. However, if the Examiner or Board wishes to resolve any other issues by way of

a telephone conference, the Examiner or Board is kindly invited to contact the undersigned

attorney at the telephone number indicated below.

Respectfully submitted,

Date: <u>May 25, 2005</u>

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8. APPENDIX OF CLAIMS ON APPEAL

Listing of Claims:

1. (Original)   A computer-implemented method of indexing a database of documents, a subset of the documents containing nested fields, each nested field having an associated start meta word and end meta word, each meta word having an associated nesting level, the method comprising:

indexing each document containing nested fields by:

parsing the document to determine locations within the document of words and

meta words in the document and to determine the nesting level associated with each meta word; and

generating an index including

word entries, each word entry identifying locations within the document of an identified word;

meta word entries, each meta word entry identifying locations within the document of an identified meta word and indicating the determined nesting level associated with the meta word; and

generic meta word entries, each generic meta word entry identifying locations within the document of a class of meta words, including meta words at all nesting levels of the meta words found in the document, the generic meta word entry including, for each identified location within the generic meta word entry, information identifying the nesting level associated with the meta word at the identified location.

2. (Original)   The computer-implemented method of claim 1, wherein each word entry, meta word entry, and generic meta word entry includes an object identifier and a location list.

3. (Original)   The computer-implemented method of claim 1, wherein each word entry, the object identifier includes one or more words, and the location list includes locations of the one or more words in the document.

4. (Original)   The computer-implemented method of claim 1, wherein for each meta word entry, the object identifier includes a meta word and an indication of the nesting level associated with the meta word, and the location list includes locations of the meta word in the document.

5. (Original)   The computer-implemented method of claim 1, wherein, for each generic meta word entry, the object identifier includes a class of meta words, including meta words at all nesting levels of the meta words found in the document, and the location list includes locations of each occurrence of each meta word in the class of meta words in the document, and further includes an indication of the nesting level associated with each occurrence of each meta word in the class of meta words at each location.

6. (Original)   The computer-implemented method of claim 5, wherein, for the location list for each generic meta word entry, each location of each occurrence of each meta word in the class of meta words in the document is mathematically combined with the nesting level associated with that occurrence of that meta word at that location to encode both the location and the nesting level into a single value.

7. (Original)   A computer-implemented method of searching a database of documents, a subset of the documents containing nested fields, each nested field having an associated start meta word and end meta word, each meta word having an associated nesting level, the method comprising:

receiving a query that specifies one or more words to be found within a specified field within a document;

determining a start meta word and end meta word associated with the specified field;

searching an index to identify locations of the specified words and locations of a class of meta words that includes at least one of the start meta word and end meta word associated with the specified field;

applying first spatial criteria to the identified locations of the class of meta words with respect to the identified locations of the specified words to select a meta word from the class of meta words;

determining the nesting level of the selected meta word;

identifying a complementary meta word corresponding to the selected meta word;

searching the index to determine a location for the identified complementary meta word; and

applying second spatial criteria to the identified locations of the specified words and to the determined location for the identified complementary meta word to generate a result that indicates whether the specified words are found within a first field associated with the selected meta word and the identified complementary meta word.

8. (Original)   The computer-implemented method of claim 7, wherein the first field is the specified field.

9. (Original)   The computer-implemented method of claim 7, wherein at least a plurality of the steps of applying first spatial criteria, determining the nesting level, identifying a complementary meta word, searching the index, and applying second spatial criteria are repeated until a final a result is generated.

10. (Original) The computer-implemented method of claim 9, wherein the final result is selected from the set consisting of (A) the specified words are found within the specified field, and (B) there is no instance of the specified words within the specified field.

11. (Original) The computer-implemented method of claim 7, wherein the step of identifying comprises identifying a complementary meta word corresponding to the selected meta word and to its determined nesting level.

12. (Original) The computer-implemented method of claim 7, wherein the class of meta words includes a specific meta word at all nesting levels of the specific meta word found in the database.

13. (Original) The computer-implemented method of claim 7, wherein the step of applying first spatial criteria comprises the steps of:

    determining a closest location of the identified locations of the class of meta words with respect to an identified location of the specified words, and

selecting the meta word from the class of meta words corresponding to the

determined closest location.

14. (Original) The computer-implemented method of claim 13, wherein the step of applying second spatial criteria comprises determining whether the identified location of the specified words falls between the determined location for the identified complementary meta word and the determined closest location of the identified locations of the class of meta words to generate a result that indicates whether the specified words are found within the specified field.

15. (Original) The computer-implemented method of claim 7, wherein the class of meta words further includes an object identifier and a location list, the object identifier including at least one of the start meta word and end meta word, and the location list including a location, and nesting level information at that location, for each occurrence of the at least one of the start meta word and end meta word.

16. (Original) A computer-implemented method of searching a database of documents, a subset of the documents containing nested fields, each nested field having an associated start meta word and end meta word, each meta word having an associated nesting level, the method comprising:

receiving a query that specifies one or more words to be found within a first specified field that is found within a second specified field within a document;

determining a first start meta word and first end meta word associated with the first specified field, and a second start meta word and second end meta word associated with the second specified field;

searching an index to identify:

locations of the specified words,

locations of a first class of meta words that includes at least one of the first start meta word and first end meta word associated with the first specified field, and

locations of a second class of meta words that includes at least one of the second start meta word and second end meta word associated with the second specified field;

applying first spatial criteria, determined at least in part from the received query, to the identified locations of the first and second classes of meta words and the identified locations of the specified words to select a first meta word from the first class of meta words, and a second meta word from the second class of meta words;

determining the nesting levels of the first an second selected meta words;

identifying a first and second complementary meta words, corresponding to the first and second selected meta words;

searching the index to determine a location for the first identified complementary meta word and a location for the second identified complementary meta word; and

applying second spatial criteria, determined from the received query, to the identified locations of the specified words and to the determined locations for the first and second identified complementary meta words to generate a result that indicates whether the specified words are found within a first field, associated with the first selected meta word and the first identified complementary meta word, that is found within a second field, associated with the second selected meta word and the second identified complementary meta word.

17. (Original) The computer-implemented method of claim 16, wherein the first field is the first specified field and the second field is the second specified field.

18. (Original) The computer-implemented method of claim 16, wherein at least a plurality of the steps of applying first spatial criteria, determining nesting levels, identifying first and second complementary meta words, searching the index, and applying second spatial criteria are repeated until a final a result is generated.

19. (Original) The computer-implemented method of claim 18, wherein the final result is selected from the set consisting of (A) the specified words are found within an instance of the first specified field that is found within an instance of the second specified field, and (B) there is no instance of the specified words within an instance of the first specified field that is within an instance of the second specified field.

20. (Original) The computer-implemented method of claim 16, wherein the steps of applying first spatial criteria, determining nesting levels, identifying first and second complementary meta words, searching the index and applying second spatial criteria include:

applying the first spatial criteria to the identified locations of the first class of meta words and to the identified locations of the specified words to select a first meta word from the first class of meta words;

determining the nesting level of the first selected meta word;

identifying a first complementary meta word, corresponding to the first selected meta word;

searching the index to determine a location for the first identified complementary meta word;

applying the second spatial criteria to the identified locations of the specified words and to the determined location for the first identified complementary meta word to generate a first result;

applying the first spatial criteria to the identified locations of the second class of meta words and to the identified location corresponding to the first selected meta word to select a second meta word from the second class of meta words;

determining the nesting level of the second selected meta word;

identifying a second complementary meta word, corresponding to the second selected meta word;

searching the index to determine a location for the second identified complementary meta word; and

applying the second spatial criteria to the determined location for the first identified complementary meta word and to the determined location for the second identified complementary meta word to generate a second result.

21. (Original) The computer-implemented method of claim 20, wherein at least a plurality of the steps of applying first spatial criteria to the identified locations of the first class of meta words, determining the nesting level of the first selected meta word, identifying the first complementary meta word, searching the index to determine a location for the first identified complementary meta word, and applying second spatial criteria to generate a first result are repeated until the first result is a first final result.

22. (Original) The computer-implemented method of claim 21, wherein the first final result is selected from the set consisting of (A) the specified words are found within an instance of the first specified field, and (B) there is no instance of the specified words within an instance of the first specified field.

23. (Original) The computer-implemented method of claim 16, wherein the step of identifying comprises identifying a first and second complementary meta words corresponding to the first and second selected meta words, and to the determined nesting levels of the first and second selected meta words.

24. (Original) The computer-implemented method of claim 16, wherein the first and second classes of meta words include a specific meta word at all nesting levels of the specific meta word found in the database.

25. (Original) The computer-implemented method of claim 16, wherein the step of applying first spatial criteria comprises the steps of:

determining a closest location of the identified locations of the first class of meta words with respect to an identified location of the specified words,

selecting a first meta word from the first class of meta words corresponding to the determined closest location of the first class of meta words,

determining a closest location of the identified locations of the second class of meta words with respect to the first closest location of the identified locations of the first class of meta words, and

selecting a second meta word from the second class of meta words corresponding to the determined closest location of the second class of meta words.

26. (Original) The computer-implemented method of claim 25, wherein the step of applying second spatial criteria comprises the steps of:

determining whether the identified location of the specified words falls between the determined location for the first identified complementary meta word and the determined closest location of the first class of meta words,

determining whether the determined location for the first identified complementary meta word falls between the determined location for the second identified complementary meta word and the identified location of the specified words, and

generating a result, based on the determining steps of applying second spatial criteria, that indicates whether that the specified words are found within an instance of the first specified field that is found within an instance of the second specified field.

27. (Original) The computer-implemented method of claim 16, wherein the first class of meta words further includes an object identifier and a location list, the object identifier including at least one of the first start meta word and first end meta word, and the location list including a location, and nesting level information at that location, for each occurrence of the at least one of the first start meta word and first end meta word.

28. (Original) The computer-implemented method of claim 16, wherein the first class of meta words and the second class of meta words constitute the same class of meta words.

29. (Original) A computer-implemented method for searching an index of a database of documents, the index having entries, each entry including an object identifier and a

location list, each object identifier including at least one of a word and a meta word, each location list including one or more locations of the at least one of a word and a meta word of each corresponding object identifier, each entry associated with a meta word also including nesting level information for the meta word, the computer-implemented method comprising:

receiving a query that specifies one or more words to be found within a specified field within a document;

determining a start meta word and end meta word associated with the specified field;

identifying a bounding meta word by selecting one of the start meta word and end meta word;

searching the index to identify a first entry that has an object identifier associated with the specified words;

searching the index to identify a second entry that has an object identifier associated with the bounding meta word;

determining a bounding location from a closest occurrence of the bounding meta word with respect to the specified words, by comparing the location list of the second entry and the location list of the first entry;

identifying nesting level information for the bounding meta word at the bounding location;

identifying a complementary meta word to the bounding meta word having corresponding nesting level information as the identified nesting level information for the bounding meta word;

searching the index to locate a third entry that has an object identifier associated with the complementary meta word;

determining a complementary location from the location list of the third entry;

and

generating a result that indicates whether the specified words are within a first field, associated with the bounding meta word and the complementary meta word, by determining whether a location in the location list of the first entry falls between the bounding location and the complementary location.

30. (Original) The computer-implemented method of claim 29, wherein the complementary location of the complementary meta word is opposite to the bounding location of the bounding meta word, relative to the specified words, in the index of the database of documents.

31. (Original) The computer-implemented method of claim 29, wherein the first field is the specified field.

32. (Original) The computer-implemented method of claim 29, wherein the step of determining a bounding location comprises determining a bounding location of the bounding meta word by applying first spatial criteria to the location list of the second entry and the location list of the first entry, and further wherein the computer-implemented method includes repeating at least a plurality of the steps of determining a bounding location, identifying nesting level information, identifying a complementary meta word, searching the index, determining a complementary location, and generating a result until a final a result is generated.

33. (Original) The computer-implemented method of claim 32, wherein the final result is selected from the set consisting of (A) the specified words are found within the specified field, and (B) there is no instance of the specified words within the specified field.

34. (Original) A computer program product for use in conjunction with a computer system, the computer system for indexing a database of documents, a subset of the documents containing nested fields, each nested field having as associated start meta word and end meta word, each meta word having an associated nesting level, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

an indexer for indexing each document containing nested fields by configuring the computer to:

parse the document to determine locations within the document of words and meta words in the document and to determine the nesting level associated with each meta word; and

generate an index including

word entries, each word entry identifying locations within the document of an identified word;

meta word entries, each meta word entry identifying locations within the document of an identified meta word and indicating the determined nesting level associated with the meta word; and

generic meta word entries, each generic meta word entry identifying locations within the document of a class of meta words, including meta words at all nesting levels of the meta words found in the document, the generic meta word entry including, for

each identified location within the generic meta word entry, information identifying the

nesting level associated with the meta word at the identified location.

35. (Original) The computer program product of claim 34, wherein each word entry,

meta word entry, and generic meta word entry includes an object identifier and a location list.

36. (Original) The computer program product of claim 34, wherein, for each meta

word entry, the object identifier includes a meta word and an indication of the nesting level

associated with the meta word, and the location list includes locations of the meta word in the

document.

37. (Original) The computer program product of claim 34, wherein, for each generic

meta word entry, the object identifier includes a class of meta words, including meta words at

all nesting levels of the meta words found in the document, and the location list includes

locations of each occurrence of each meta word in the class of meta words in the document,

and further includes an indication of the nesting level associated with each occurrence of each

meta word in the class of meta words at each location.

38. (Original) The computer program product of claim 37, wherein, for the location

list for each generic meta word entry, each location of each occurrence of each meta word in

the class of meta words in the document is mathematically combined with the nesting level

associated with that occurrence of that meta word at that location to encode both the location

and the nesting level into a single value.

39. (Original) A computer program product for use in conjunction with a computer system, the computer system for searching a database of documents, a subset of the documents containing nested fields, each nested field having an associated start meta word and end meta word, each meta word having an associated nesting level, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for receiving a query that specifies one or more words to be found within a specified field within a document;

instructions for determining a start meta word and end meta word associated with the specified field;

instructions for searching an index to identify locations of the specified words and locations of a class of meta words that includes at least one of the start meta word and end meta word associated with the specified field;

instructions for applying first spatial criteria to the identified locations of the class of meta words with respect to the identified locations of the specified words to select a meta word from the class of meta words;

instructions for determining the nesting level of the selected meta word;

instructions for identifying a complementary meta word corresponding to the selected meta word;

instructions for searching the index to determine a location for the identified complementary meta word; and

instructions for applying second spatial criteria to the identified locations of the specified words and to the determined location for the identified complementary meta word to generate a result that indicates whether the specified words are found within a first field associated with the selected meta word and the identified complementary meta word.

40. (Original) The computer program product of claim 39, wherein the first field is the specified field.

41. (Original) The computer program product of claim 39, wherein at least a plurality of the instructions for applying first spatial criteria, determining the nesting level, identifying a complementary meta word, searching the index, and applying second spatial criteria are repeated until a final a result is generated.

42. (Original) The computer program product of claim 41, wherein the final result is selected from the set consisting of (A) the specified words are found within the specified field, and (B) there is no instance of the specified words within the specified field.

43. (Original) The computer program product of claim 39, wherein the instructions for identifying comprise instructions for identifying a complementary meta word corresponding to the selected meta word and to its determined nesting level.

44. (Original) The computer program product of claim 39, wherein the class of meta words includes a specific meta word at all nesting levels of the specific meta word found in the database.

45. (Original) The computer program product of claim 39, wherein the instructions for applying first spatial criteria comprise:

instructions for determining a closest location of the identified locations of the class of meta words with respect to an identified location of the specified words, and

instructions for selecting the meta word from the class of meta words

corresponding to the determined closest location.

46. (Original) The computer program product of claim 45, wherein the instructions

for applying second spatial criteria comprise instructions for determining whether the

identified location of the specified words falls between the determined location for the

identified complementary meta word and the determined closest location of the identified

locations of the class of meta words to generate a result that indicates whether the specified

words are found within the specified field.

47. (Original) The computer program product of claim 39, wherein the class of meta

words further includes an object identifier and a location list, the object identifier including at

least one of the start meta word and end meta word, and the location list including a location,

and nesting level information at that location, for each occurrence of the at least one of the

start meta word and end meta word.

48. (Original) A computer program product for use in conjunction with a computer

system, the computer system for searching a database of documents, a subset of the

documents containing nested fields, each nested field having an associated start meta word

and end meta word, each meta word having an associated nesting level, the computer

program product comprising a computer readable storage medium and a computer program

mechanism embedded therein, the computer program mechanism comprising:

instructions for receiving a query that specifies one or more words to be found

within a first specified field that is found within a second specified field within a document;

instructions for determining a first start meta word and first end meta word associated with the first specified field, and a second start meta word and second end meta word associated with the second specified field;

instructions for searching an index to identify:

locations of the specified words,

locations of a first class of meta words that includes at least one of the first start meta word and first end meta word associated with the first specified field, and

locations of a second class of meta words that includes at least one of the second start meta word and second end meta word associated with the second specified field;

instructions for applying first spatial criteria, determined at least in part from the received query, to the identified locations of the first and second classes of meta words and the identified locations of the specified words to select a first meta word from the first class of meta words, a second meta word from the second class of meta words;

instructions for determining the nesting levels of the first and second selected meta words;

instructions for identifying a first and second complementary meta words, corresponding to the first and second selected meta words, and searching the index to determine a location for the first identified complementary meta word and a location for the second identified complementary meta word; and

instructions for applying second spatial criteria, determined from the received query, to the identified locations of the specified words and to the determined locations for the first and second identified complementary meta words to generate a result that indicates whether the specified words are found within a first field, associated with the first selected meta word and the first identified complementary meta word, that is found within a second

field, associated with the second selected meta word and the second identified

complementary meta word.

49. (Original) The computer program product of claim 48, wherein the first field is

the first specified field and the second field is the second specified field.

50. (Original) The computer program product of claim 48, wherein at least a plurality

of the instructions for applying first spatial criteria, determining nesting levels, identifying

first and second complementary meta words, searching the index, and applying second spatial

criteria are repeated until a final a result is generated.

51. (Original) The computer program product of claim 50, wherein the final result is

selected from the set consisting of (A) the specified words are found within an instance of the

first specified field that is found within an instance of the second specified field, and (B)

there is no instance of the specified words within an instance of the first specified field that is

within an instance of the second specified field.

52. (Original) The computer program product of claim 48, wherein the instructions

for applying first spatial criteria, determining nesting levels, identifying first and second

complementary meta words, searching the index and applying second spatial criteria include:

instructions for applying the first spatial criteria to the identified locations of

the first class of meta words and to the identified locations of the specified words to select a

first meta word from the first class of meta words;

instructions for determining the nesting level of the first selected meta word;

instructions for identifying a first complementary meta word, corresponding to the first selected meta word;

instructions for searching the index to determine a location for the first identified complementary meta word;

instructions for applying the second spatial criteria to the identified locations of the specified words and to the determined location for the first identified complementary meta word to generate a first result;

instructions for applying the first spatial criteria to the identified locations of the second class of meta words and to the identified location corresponding to the first selected meta word to select a second meta word from the second class of meta words;

instructions for determining the nesting level of the second selected meta word;

instructions for identifying a second complementary meta word, corresponding to the second selected meta word;

instructions for searching the index to determine a location for the second identified complementary meta word; and

instructions for applying the second spatial criteria to the determined location for the first identified complementary meta word and to the determined location for the second identified complementary meta word to generate a second result.

53. (Original) The computer program product of claim 52, wherein at least a plurality of the instructions for applying first spatial criteria to the identified locations of the first class of meta words, determining the nesting level of the first selected meta word, identifying the first complementary meta word, searching the index to determine a location for the first

identified complementary meta word, and applying second spatial criteria to generate a first result are repeated until the first result is a first final result.

54. (Original) The computer program product of claim 53, wherein the first final result is selected from the set consisting of (A) the specified words are found within an instance of the first specified field, and (B) there is no instance of the specified words within an instance of the first specified field.

55. (Original) The computer program product of claim 48, wherein the instructions for identifying comprise instructions for identifying a first and second complementary meta words corresponding to the first and second selected meta words, and to the determined nesting levels of the first and second selected meta words.

56. (Original) The computer program product of claim 48, wherein the first and second classes of meta words include a specific meta word at all nesting levels of the specific meta word found in the database.

57. (Original) The computer program product of claim 48, wherein the instructions for applying first spatial criteria comprise:

instructions for determining a closest location of the identified locations of the first class of meta words with respect to an identified location of the specified words,

instructions for selecting a first meta word from the first class of meta words corresponding to the determined closest location of the first class of meta words,

instructions for determining a closest location of the identified locations of the

second class of meta words with respect to the first closest location of the identified locations

of the first class of meta words, and

instructions for selecting a second meta word from the second class of meta

words corresponding to the determined closest location of the second class of meta words.

58. (Original) The computer program product of claim 51, wherein the instructions

for applying second spatial criteria comprise:

instructions for determining whether the identified location of the specified

words falls between the determined location for the first identified complementary meta word

and the determined closest location of the first class of meta words,

instructions for determining whether the determined location for the first

identified complementary meta word falls between the determined location for the second

identified complementary meta word and the identified location of the specified words, and

instructions for generating a result that indicates whether that the specified

words are found within an instance of the first specified field that is found within an instance

of the second specified field if both determinations are true.

59. (Original) The computer program product of claim 48, wherein the first class of

meta words further includes an object identifier and a location list, the object identifier

including at least one of the first start meta word and the first end meta word, and the location

list including a location, and nesting level information at that location, for each occurrence of

the at least one of the first start meta word and first end meta word.

60. (Original) The computer program product of claim 48, wherein the first class of meta words and the second class of meta words constitute the same class of meta words.

61. (Original) A computer program product for use in conjunction with a computer system, the computer system for searching an index of a database of documents, the index having entries, each entry including an object identifier and a location list, each object identifier including at least one of a word and a meta word, each location list including one or more locations of the at least one of a word and a meta word of each corresponding object identifier, each entry associated with a meta word also including nesting level information for the meta word, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for receiving a query that specifies one or more words to be found within a specified field within a document;

instructions for determining a start meta word and end meta word associated with the specified field;

instructions for identifying a bounding meta word by selecting one of the start meta word and end meta word;

instructions for searching the index to identify a first entry that has an object identifier associated with the specified words;

instructions for searching the index to identify a second entry that has an object identifier associated with the bounding meta word;

instructions for determining a bounding location from a closest occurrence of the bounding meta word with respect to the specified words, by comparing the location list of the second entry and the location list of the first entry;

instructions for identifying nesting level information for the bounding meta word at the bounding location;

instructions for identifying a complementary meta word to the bounding meta word having corresponding nesting level information as the identified nesting level information for the bounding meta word;

instructions for searching the index to locate a third entry that has an object identifier associated with the complementary meta word;

instructions for determining a complementary location from the location list of the third entry; and

instructions for generating a result that indicates whether the specified words are within a first field, associated with the bounding meta word and the complementary meta word, by determining whether a location in the location list of the first entry falls between the bounding location and the complementary location.

62. (Original) The computer program product of claim 61, wherein the complementary location of the complementary meta word is opposite to the bounding location of the bounding meta word, relative to the specified words, in the index of the database of documents.

63. (Original) The computer program product of claim 61, wherein the first field is the specified field.

64. (Original) The computer program product of claim 61, wherein the instructions for determining a bounding location comprise instructions for determining a bounding location of the bounding meta word by applying first spatial criteria to the location list of the

second entry and the location list of the first entry, and further wherein the computer program product includes instructions for repeating at least a plurality of the instructions for determining a bounding location, identifying nesting level information, identifying a complementary meta word, searching the index, determining a complementary location, and generating a result until a final a result is generated.

65. (Original) The computer program product of claim 64, wherein the final result is selected from the set consisting of (A) the specified words are found within the specified field, and (B) there is no instance of the specified words within the specified field.